

Notice of Allowability

Application No.

09/632,522

Examiner

Ayal I Sharon

Applicant(s)

PAPAEFSTATHIOU, EFSTATHIOS

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 11/22/04.
2. ☒ The allowed claim(s) is/are 1-31.
3. ☒ The drawings filed on 04 August 2000 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

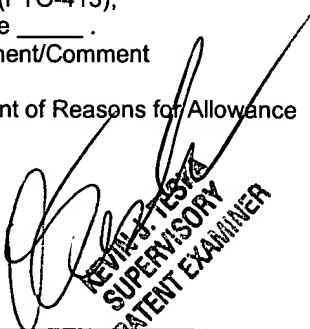
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


REVIEWED BY
SUPERVISORY
PATENT EXAMINER

DETAILED ACTION

Introduction

1. Claims 1-31 of U.S. Application 09/632,522, originally filed on 8/4/2000 are presented for examination. This application claims priority benefit of provisional application 60/209,759, filed on 6/6/2000.
2. In the After-Final Request for Reconsideration filed 11/22/04, no claims were amended, cancelled or added.

Claim Interpretations

3. "Bandwidth" is defined as follows in "The Art of Computer Systems Performance Analysis" by Raj Jain (pp.38-39):

The maximum achievable throughput under ideal workload conditions is called **nominal capacity** of the system. For computer networks, the nominal capacity is called the **bandwidth** and is usually expressed in bits per second.

The Jain reference was submitted by the applicants in an IDS (paper #2).

4. "Event Horizon" is defined by the Applicant in the specification (p.18, lines18-21) as follows:

The event with the shortest duration to completion or creation determines the event horizon (EH). The event horizon defines the duration of the next steady state of the system. For this period the network traffic remains steady.

5. "Contention Structure", and the corresponding "Contention Array", are defined by the Applicant in the specification (p.14, lines 20-27).
6. "Message Events" are defined by the Applicants in the specification (p.12, lines 6-10).

Examiner's Notice of Reasons for Allowance

7. The following is an examiner's statement of reasons for allowance. The closest prior art of record is:
 - a. Smith, C. Performance Engineering of Software Systems. ISBN 0-201-53769-9. (Henceforth referred to as "**Smith**").
 - b. Hardwick. U.S. Patent 6,292,822 (Henceforth referred to as "**Hardwick**").
8. Applicants' first set of claims consists of claims 1-10. Claim 1 recites the following limitations:
 1. A method for generating a delay model in a networked system under a defined workload, the method comprising:
 - generating, for a first active message, a routing structure based upon a network configuration and a source and destination of the active message;
 - creating a contention structure created by summing together routing structure elements for active message events;
 - first calculating, for the first active message, an available bandwidth for use by the message at a path between network nodes utilized by the active message,the available bandwidth being a function of a level of contention between the first active message and at least a second active message on the path,
 - the level of contention being determined in accordance with the contention structure and the routing structure for the first active message; and
 - second calculating, for the first active message, based upon the available bandwidth, a modeled communication delay to communicate at least a portion of the first active message.

9. The present application defines the creation of a "contention array" (which Examiner finds as corresponding to the claimed "contention structure") as follows (See spec, p.14, lines 20-26).:

The contention array represents the relative congestion of various links on a network resulting from simultaneously pending active message transmission requests. Where $N(\text{msg})$ corresponds to the quantity of active messages, the contention array (CA) at any particular point in (simulated) time is defined as the sum of the active message routing arrays (RA's) as shown in (4):

$$CA = \sum_{i=1}^{N_{\text{msg}}} RA^i$$

10. The routing arrays (RA's) are also defined in the specification (see p.14, lines 8-16, and Fig.4).
11. Examiner agrees with Applicant's argument in the After Final Request for Reconsideration (see p.9, filed on 11/22/04) that "Smith neither discloses nor suggests creating a contention structure by summing together routing structure elements for active message events."
12. The Hardwick reference teaches a dynamic load balancing among processors in a parallel computer. However, the Hardwick reference does not expressly teach the creation of a "contention structure" as taught and claimed in the present application.
13. Therefore, Claim 1 is allowed. Independent claims 11, 21, and 31 are allowed for the same reasons, as are dependent claims 2-10, 12-20, and 22-30.
14. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should

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preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ayal I. Sharon whose telephone number is (571) 272-3714. The examiner can normally be reached on Monday through Thursday, and the first Friday of a biweek, 8:30 am – 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska can be reached at (571) 272-3716.

Any response to this office action should be faxed to (703) 872-9306 or mailed to:

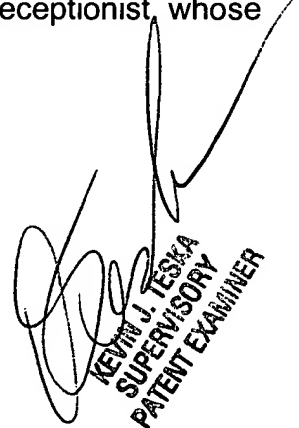
Director of Patents and Trademarks
Washington, DC 20231

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Tech Center 2100 Receptionist, whose telephone number is (571) 272-2100.

Ayal I. Sharon

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January 14, 2005



KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER